Maastricht University

New Editor-in-Chief Editorial

Citation for published version (APA):

Mody, C. C. M. (2018). New Editor-in-Chief Editorial. *Engineering Studies*, *10*(1), 1-11. https://doi.org/10.1080/19378629.2018.1427748

Document status and date:
Published: 01/01/2018

DOI:
10.1080/19378629.2018.1427748

Please check the document version of this publication:

• A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
• The final author version and the galley proof are versions of the publication after peer review.
• The final published version features the final layout of the paper including the volume, issue and page numbers.

Link to publication

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

• Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
• You may not further distribute the material or use it for any profit-making activity or commercial gain
• You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the “Taverne” license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy
If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Download date: 05 May. 2023

Engineering Studies

ISSN: 1937-8629 (Print) 1940-8374 (Online) Journal homepage: http://www.tandfonline.com/loi/test20

New Editor-in-Chief Editorial

Cyrus C. M. Mody

To cite this article: Cyrus C. M. Mody (2018) New Editor-in-Chief Editorial, Engineering Studies, 10:1, 1-11, DOI: 10.1080/19378629.2018.1427748

To link to this article: https://doi.org/10.1080/19378629.2018.1427748

Published online: 07 Jun 2018.

Submit your article to this journal

Article views: 225

View Crossmark data

Full Terms & Conditions of access and use can be found at
http://www.tandfonline.com/action/journalInformation?journalCode=test20

ENGINEERING STUDIES, 2018
VOL. 10, NO. 1, 1–11
https://doi.org/10.1080/19378629.2018.1427748

Routledge
Taylor & Francis Group

EDITORIAL

Check for updates

New Editor-in-Chief Editorial

A new journal editor who follows a successful predecessor faces a daunting challenge. Doubly so if that predecessor was the founder of the journal. Everyone in engineering studies, and everyone associated with *Engineering Studies*, owes Gary Downey an enormous debt for putting the journal on its feet, bringing it through nine great volumes, and integrating it with the International Network for Engineering Studies (INES) and other institutions in our field. Much of my own research highlights the importance of institutions such as journals, conference series, professional societies, academic centers, and funding streams in constituting research communities. I know how much a field like engineering studies needs those institutions, but also how difficult it can be for the people who try to hold those institutions together. Several of the community builders I've written about were driven to distraction, ill health, or megalomania, or simply gave up and left the fields they helped establish. Fortunately, Gary hasn't succumbed and will remain a vital part of INES and a resource for the journal. For myself and the entire editorial team: thank you, Gary!

The editor's choice

So what is the state of *Engineering Studies* as it enters its 10th volume and takes on a new editor? How has *Engineering Studies* thus far reflected, but also constituted, the field of engineering studies? My own answer to those questions can be glimpsed in the six articles I selected for the Editor's Choice Collection on the journal's 'meet the new editor' page (http://explore.tandfonline.com/content/est/test).[1] These aren't 'the best' *Engineering Studies* articles, whatever that would mean – though I would consider these *among* the best by any definition. Rather, they demonstrate how far the journal has come while modeling some of the directions in which it could continue to go further.

They do that in part through their geographic reach: between them, the authors hail from, live in, and write about much of the globe. As do engineers! Indeed, as Aalok Khandekar's article nicely shows, engineers are made by their movement. Engineering is, and has always been, a transnational profession, bound up with empire, commerce, and migration. Yet the transnational is also constitutive of the national. To name three twentieth-century modalities, the movement of engineers has helped nations lay claim to empire, recover from the loss of empire, and declare themselves free from empire.[2] Engineering studies, therefore, should pay close attention to engineers' travels, and the ways their peripatetic knowledge reinforces and/or undermines nationalist aims. The field, and this

[1] Zhu, "Engineering Ethics Studies in China," 2010; Cech and Waidzunas, "Navigating the Heteronormativity of Engineering," 2011; Khandekar, "Education Abroad," 2013; Knowles, "Engineering Risk and Disaster," 2014; Gross, "Journeying to the Heat of the Earth," 2015; González Rivera, *et al.*, "Embroidering Engineering," 2016.

[2] Nash, "Traveling Technology?," 2012; Mehos and Moon, "The Uses of Portability," 2011; Bassett, "MIT-Trained Swadeshis," 2009.

© 2018 Informa UK Limited, trading as Taylor & Francis Group

journal, should do so by welcoming scholars who sit in – or travel among – a variety of national contexts. The diversity of Gary's editorial team and the content of the journal thus far have signaled that. I can only aim to continue that geographic diversity and to expand it where possible.

The editor's choice articles also convey the journal's, and the field's, ambitions for interdisciplinarity. Across this sampling, history, anthropology, philosophy, sociology, literature, and science and technology studies (STS) all offer their unique perspectives. Nor did I have to strain to come up with an interdisciplinary selection – the journal's offerings have been consistent in their disciplinary variety. As, again, are engineers themselves! There is no one monolithic 'engineering', but rather a dizzying mélange of fields, each hosting a variety of methods, epistemologies, shared values, institutions, etc. It's very difficult to identify any red thread running among all the people whom we could count, or who count themselves, as engineers. My view is, we should be inclusive enough that it would be similarly difficult to identify a red thread running among all the readers of this journal or all the people who shelter under the umbrella of engineering studies.

One thread which does run among *many* engineers, though, is that they do not only practice engineering. Engineers' attitudes toward other disciplines have varied greatly over time and space – from defensive to welcoming to imperialistic. But engineers' need to satisfy a variety of different stakeholders in very complex conditions generally means that they are, as John Law famously put it, 'heterogeneous engineers'.[3] Here's a nice example of engineers' own acknowledgement of their heterogeneous skills which I encountered in my research: a memorandum of understanding between the US National Aeronautics and Space Administration and Stanford University in 1968 in which NASA insisted that an aerospace engineer must 'be able to deal with economic, social, legal, business, and management issues of the project', and therefore the NASA-Stanford 'program will center around projects where students work as part of multidisciplinary teams . . . . Since realistic systems studies always involve economic and social as well as technical considerations, the teams of students and faculty advisers may include non-engineers'.[4] The interdisciplinary ideal of that era, as Matthew Wisnioski has argued, stimulated the formation of STS programs, calls for engineering ethics courses and reforms, and eventually the field of engineering studies itself.[5] As practitioners of that field, we may disagree with some of NASA's and Stanford's aims, yet the interdisciplinarity they sought is still fundamental to our outlook.

The six editor's choice articles also cover a wide range of topics: ethics, education, careers, globalization, risk/disaster, and user (-oriented) innovation. Obviously, these don't represent the full spectrum of topics contained in the journal up to now, but these are some of the foundational themes of the field. But foundations are meant to be built upon, and the journal must continue to welcome articles on an ever-expanding range of topics even as it maintains contact with core issues such as ethics and education. Later in this editorial, I'll lay out some of the topics I'd particularly like to encourage.

Finally, one way in which the editor's choice articles fall somewhat short is their institutional diversity. All the articles' authors were based in academic organizations at the time

[3] Law, "Technology and Heterogeneous Engineering," 1987.
[4] *Memorandum of Understanding*, 1968.
[5] Wisnioski, *Engineers for Change*, 2012.

of their article's publication.[6] To some extent, it's natural that the pages of a peer-reviewed journal would largely be filled by academics. Those of us who work in universities depend on publication in such journals, and we routinely look to journals such as *Engineering Studies* as places where our research can be assessed and disseminated, and where we can read up on the state of the art. That said, universities have no monopoly on new ideas, perhaps especially in a field like engineering studies. Engineering has an academic dimension, but it is also out and about in the world; engineering studies should be no different. Think tanks, museums, government agencies, non-governmental organizations, philanthropic foundations, labor unions, newspapers, corporations, etc. all contain people who consume *and* produce knowledge about engineering culture and practices. *Engineering Studies* benefits if such people publish here. Nor should we overlook authors working outside of an organizational host. Just as the artisan, independent inventor, and the hobbyist are important if underappreciated figures in engineering, independent scholars are important to engineering studies.[7]

An annotated memoir

Before I further explain my aspirations for *Engineering Studies*, it may help readers to know a bit more about how I've gotten to this point. Even in a highly collaborative journal like this one, the editor-in-chief's sensibilities inform each issue, and readers should know a little about what those sensibilities are. This journal encourages authors to write from an autobiographical perspective, particularly in our Critical Participation contributions. That said, memoir isn't a genre I myself normally employ, so I'll combine it with a genre I am more familiar with, the literature survey. What follows, then, are some turning points in my life/career presented as an introduction to my idiosyncratic map of the field.

My story begins in a medium-sized college town in the American Midwest. Edwin Layton has shown that in the early twentieth century, an outsize proportion of American engineers came from similar places, and indeed organizations such as AT&T were decidedly prejudiced in favor of hiring (white, male, Protestant) engineers from such places for much of the twentieth century.[8] My mother's family had moved among such towns for more than a century, but my father came to the US from India at the start of the wave of immigration which has made American engineering significantly more diverse in some (but certainly not all) respects.[9] Neither side of my family, though, had had much contact with the engineering profession. Yet the post-Sputnik educational changes designed to get young Americans – well, especially white boys – to pursue engineering careers worked their magic on me, and by the time I went to college I knew I wanted to major in engineering.[10]

In the mid-1990s, though, Harvard's undergraduate engineering program was weighted more toward applied mathematics than similar programs at other schools, and students

[6] Except for the last author of "Embroidering Engineering," Manuel Franco-Avellaneda, who was based in a government agency.

[7] Mamidipudi, "Towards a Theory of Innovation in Handloom Weaving in India," 2016; Hintz, "Portable Power," 2009; Haring, *Ham Radio's Technical Culture*, 2007; Long, *Openness, Secrecy, Authorship*, 2001; Pannabecker, "Representing Mechanical Arts," 2002. Notably, these studies of non-engineers doing engineering are all by scholars working outside (or unconventionally affiliated with) universities.

[8] Layton, *The Revolt of the Engineers*, 1971, 9; Gertner, *The Idea Factory*, 2012, pp. 38–39.

[9] Khadria, *Skilled Labour Migration from Developing Countries*, 2002, p. 11.

[10] Onion, *Innocent Experiments*, 2016.

were expected to fulfill a large number of humanities 'distribution' courses. Thankfully so, since I was good enough at applied math but not proficient in more hands-on engineering, and I was as fascinated by courses on the French Revolution and postmodern theater as those on thermodynamics and signals processing. But what really caught my attention were my professors' occasional nods to the diversity and limits of technical rationalities in engineering. Why, for instance, were there three different undergraduate thermodynamics courses (in chemistry, physics, and engineering)? Isn't thermo thermo? And why did our professors dismiss materials such as diamond and ruby out of hand as solutions to our design problems, even though our Ashby charts told us to consider them? The answers are fairly obvious, and yet they also speak to the fact that engineering is done by *people*, participants in some wider society, rather than by highly rational beings with unlimited time, knowledge, and resources. From conversations and reading colleagues' biographical statements in grant proposals and webpages over the years, I suspect that asking these kinds of questions was the first step in moving from engineering to engineering studies for many scholars in my generation.

Thus, after college I pursued such questions by enrolling in a PhD program in science and technology studies. Of course, in leaving engineering I was, in some sense, being a very typical engineer. In many countries, an engineering education has been a stepping stone to a variety of non-engineering careers, from Soviet politics to Wall Street banking.[11] One of the things that made the Cornell STS department so stimulating was that it welcomed people with backgrounds like mine, but also people coming to STS from the humanities and social sciences. Having a degree in a science or engineering field was no prerequisite for saying interesting things about science and engineering; having a background in the humanities or social sciences was no prerequisite for applying those fields' methods and concepts. My attitude toward submissions to *Engineering Studies* is very much conditioned by my time in such an environment.

My editorial judgment is also conditioned by the outlook – some might say ideology – of Cornell STS in the late 1990s. That outlook is rather hard to define, but it includes ideas such as the multiplicity of identities, knowledges, and ontologies; contingency rather than determinism; the contestability and performativity of almost any claim or distinction; and the co-production of knowledge, technology, and social order, along with the pursuit of particular forms of knowledge and technology as a way to achieve preferred social orders.[12] In conversations with STS colleagues, I've sometimes heard that they aren't sure that STS research is at home in *Engineering Studies*. That seems to be pure misconception rather than a result of any journal policy. Gary, after all, is employed in an STS department, and plenty of STS-ish work has been published in *Engineering Studies*. But given that misconception I want to make plain that while this journal will continue to welcome work which is not particularly close to STS – e.g. in engineering education, mainstream sociology, or engineering ethics – it is also most certainly a home for work which does draw on STS. Indeed, I particularly want to encourage contributions which experiment with bringing STS perspectives into more active engagement with some of these foundational fields of engineering studies.[13]

[11] For the former, see Graham, *The Ghost of the Executed Engineer*, 1996. For the latter, Mackenzie, "Physics and Finance," 2001 (which, despite the title, draws links between "financial engineering" and "engineering's more 'physical' disciplines."

[12] For the precepts of late-1990s Cornell STS, see the chapters and authors in Jasanoff, *States of Knowledge*, 2004.

[13] Beddoes, *Practices of Brokering*, 2011.

When I first arrived at Cornell, I'd planned to do an ethnography of a materials science lab group, and indeed my first publications used ethnographic methods to understand how materials researchers and surface scientists deal with sound and other (arguable) contaminants.[14] However, I increasingly became interested in figuring out how various instruments – particularly different microscopes – made their way into such laboratories and how they evolved along the way. That's more of a historical question, so my dissertation and first book ended up combining ethnographic methods with oral history interviews.[15] I was therefore lucky to be mentored at Cornell by Ron Kline, one of the early STS-inspired historians of engineering.[16] And ever since my time in Ithaca, I've been employed as a historian – first at the Chemical Heritage Foundation (CHF), then in the history departments at Rice University and now Maastricht University. For that reason, my research is now based on more quintessentially historical archival evidence. But I still view historical and contemporary approaches as continuous with, and informing, each other. That outlook has characterized *Engineering Studies* under Gary's leadership and I intend to maintain it (and in that vein see, for instance, Scott Knowles' Editor's Choice article).

After Cornell, I received essentially a second (third?) education as a fellow and then a member of staff at CHF (renamed the Science History Institute as of February 1, 2018). CHF is many things: part think tank, part museum, part academic research institute, and part publishing house. Some of its work is oriented to academic historians and social scientists, some to industry, some to professional chemists and chemical engineers, some to policymakers, and some to the public at large.[17] Its staff manages to tailor ideas from history and STS for each of those audiences. In my time there, I often found that working with and for non-academic audiences afforded insights which informed my contributions to the academic literature. Because of my time in that environment I want to encourage *Engineering Studies* authors to try writing in lots of genres for lots of audiences before, during, and after they write for this journal. That's one reason I would like more institutional diversity among our authors, and also why the journal will move toward promoting our articles, and engineering studies more generally, for wider audiences on more platforms. This is work in progress, but it's also work which must progress.

As I was finishing my dissertation, and through my time at CHF, I became involved in another heterogeneous field which continues to inform my editorial vision: the social studies of nanotechnology community. When I began my dissertation research, the people I interviewed generally described themselves as chemists, materials scientists, electrical engineers, applied physicists, etc. By the time I finished, they were – sometimes grudgingly – adding that they did 'nanotechnology' or 'nanoscience'. As a consequence, I was invited – by Davis Baird, Alfred Nordmann, Ann Johnson, and Patrick McCray, among others – to join the emerging group of humanists and social scientists who were studying nanotechnology. Many of us were funded by our countries' national nanotechnology initiatives because policymakers wanted to avoid 'another GMO backlash'. As some of us predicted, there was never that much danger of a nano backlash, and so after about ten years both scholars' and policymakers' attentions largely wandered to new 'emerging technologies' such as synthetic biology, geoengineering, and artificial intelligence.

[14] Mody, "A Little Dirt," 2001; "The Sounds of Science," 2005.
[15] Mody, *Instrumental Community*, 2011.
[16] Klein, *Steinmetz*, 1992; "Construing 'Technology' as 'Applied Science'," 1995.
[17] From Ottinger, *Assessing Community Advisory Panels*, 2008 to Thackray, Brock, and Jones, *Moore's Law*, 2015.

Yet social studies of nano left behind some enduring institutions, such as the Society for the Studies of New and Emerging Technologies and the *Journal of Responsible Innovation*. Under new guises, particularly Responsible Research and Innovation, the field's concepts, practices, and people continue to apply humanities and social science perspectives in fostering more humane, participatory, equitable, and sustainable forms of science, technology, and engineering. Social studies of nano and RRI haven't had much of an explicit presence in *Engineering Studies* thus far, yet I see this journal as a natural home for work in that vein. The articles in the 2013 special issue on synthetic biology, for instance, could easily be construed as RRI-type scholarship on an ostensibly 'emerging' technology.[18] Readers should note that several of *Engineering Studies*' new associate editors have some connection to social studies of nano and/or RRI.[19] Those networks, I believe, contain important readers, reviewers, and authors of this journal's content.

Let me, then, quickly bring my story up to the present. After CHF, I moved to the History Department at Rice University in Houston – a city which exemplifies the engineering profession's many contradictions, its ability both to improve and degrade. My eight years there offered many opportunities to teach and collaborate with engineers, and to learn from colleagues at both Rice and the University of Houston who have interesting things to say about engineers, particularly from the perspective of the emerging field of energy humanities.[20] But when the chance came in 2015 to join Maastricht University's thriving STS – and, indeed, engineering studies – community, I took it. Of course, resettling an ocean away from the archives I rely on means that my own writing and research has slowed somewhat. As a consequence, I've become much more involved in editing and supporting others' writing. I've been involved in several volumes and journals over the years; now, with *Engineering Studies*, I have the chance to put some ideas borrowed from that experience into practice at a journal very close to my core academic interests. Of course, there will probably be hiccoughs along the way! But, dear readers, reviewers, authors, and the editorial team – I look forward to collaborating with you to continue *Engineering Studies*' tradition of high-quality inquiry, debate, and restless curiosity.

Where to next?

And now we come to the new editor's programmatic statement of their vision for the journal. Such statements are not, however, my strength or inclination. Indeed, an important element of my vision is to organize the journal around something like an anti-program – i.e. to make the editorial process collective enough that *Engineering Studies* doesn't get locked into my idiosyncratic views on the field, but instead is receptive to unconventional contributions which take the field in unexpected directions. So in recruiting new associate and advisory editors, I've sought people who have a variety of interests, are involved in diverse academic and non-academic networks, and are familiar with a variety of methods.

That said, I've also assembled the new editorial team with an eye to the topics that I see as the current leading edge of engineering studies, plus topics which don't yet have a major

[18] See Schyfter, Frow, and Calvert, "Guest Editorial: Synthetic Biology," 2013.

[19] E.g., te Kulve, Konrad, Palavicino, Walhout, "Context Matters," 2013; Choi, "Emerging Opportunities," 2014; Bursten, *Surfaces, Scales, and Synthesis*, 2015.

[20] E.g., Cohn, *The Grid*, 2017; Howe, "Anthropocenic Ecoauthority," 2014.

presence in the field but should. So I want to close out this editorial by mentioning a few of those topics and how I see them fitting with the journal's current content. No doubt I will miss some important themes which will rise to prominence in the next few years; but here's my (educated) guess as to where we are headed.

Gender, sexuality, intersectionality

First and foremost, gender and, increasingly, sexuality are topics which engineering studies cannot ignore. Clearly, gender has been of growing interest in STS, history of technology, sociology, and other fields allied with engineering studies for some time. But we are now also at a moment when public debates about the gender and sexuality dimensions of engineering and technology – e.g. about Silicon Valley 'brogrammer culture' – offer an invitation to academic engineering studies scholars. Erin Cech and Tom Waidzunas' 'editor's choice' article on lesbian, gay, and bisexual engineering students is a good example of how we might answer that invitation. The popular response to the movie *Hidden Figures* (and the book of the same name by Margot Lee Shetterly) about African-American women mathematicians at NASA during the space race shows that there is significant public interest not just in the stories of women in engineering but also in the intersectionality of race, gender, class, and other identities in the making of technological artifacts and knowledge.[21] Some practitioners of engineering studies, such as Marie Hicks, have successfully packaged their own and the field's insights on gender and engineering in ways which leverage that public interest and advance the debate about, for instance, the 'Google memo'.[22] Others, such as Amy Slaton, have called for engineering studies to listen to even more fields which focus on intersectionality, such as disability studies.[23] *Engineering Studies* should continue to be one of the places where peer-reviewed contributions to that conversation can be found.

Globalization

Engineering Studies is notable for having had a relatively global focus from the beginning, where related journals have had to move some distance to incorporate topics and authors outside the Global North. Asia, and increasingly Latin America, are now unexceptional – if still underrepresented – places in and for engineering studies research.[24] But much of the world still appears too rarely in the pages of this journal and its peers. We should, I hope, expect more work from and about Africa, Oceania, and a few other corners of the world in *Engineering Studies* in coming years. That said, the future of the field is likely to lie with transnational studies rather than ticking off a list of regions 'represented' in current scholarship. Engineering is and has long been a global endeavor. More pointedly, the engineer has long been a world-historical actor in bringing disparate regions into contact, in making different ends of the globe look, feel, and sound the same, and in disciplining members

[21] Shetterly, *Hidden Figures*, 2016.
[22] Hicks, *Programmed Inequality*, 2017. For a mass-circulation article linking Hicks' book to current debates, see Brewer, "How the Tech Industry Wrote Women out of History," 2017.
[23] Slaton, "Opening the Lab," 2012.
[24] E.g., Medina, *Cybernetic Revolutionaries*, 2011 or Tinn, "Cold War Politics," 2010.

of spatially distant societies to assimilate to a globalized technological infrastructure. Engineering studies should, therefore, be able to offer an important and critical perspective on globalization and global circulation.

Vernacular and mundane engineering

The past two decades-plus has seen increasing academic interest in topics such as user innovation, citizen science, and lay expertise.[25] Both popular and academic discourse about science and technology is increasingly attentive to things such as hackerspaces, DIY culture, the wisdom of the crowd, MOOCs, and similar decenterings of credentialed professionalism.[26] Engineering studies therefore risks a long decline if the field focuses too exclusively on the credentialed members of the engineering profession. I would advocate that we interpret 'engineering studies' in a broad sense – i.e. that we ask what credentialed and uncredentialed engineers have in common, what work is accomplished by differentiating between them, and what we can learn about the engineering profession from scholarship on crafters, hobbyists, user communities, indigenous experts, and others who make do with uncredentialed technological knowledge. And *vice versa* – engineering studies has much to contribute to those literatures in return. One notable group in that regard is The Maintainers, which has drawn attention to practices of repair and making-do which engineers and non-engineers share alike. As The Maintainers Lee Vinsel and Andrew Russell note, most engineers are employed in various forms of maintenance, not innovation – yet maintenance (like innovation) is something non-engineers also do.[27] That said, we should be aware that the political agenda associated with undermining credentialed expertise has a track record of association with climate denialism and neoliberalism – treating everyone as an expert can be either a progressive or a reactionary move.[28] In light of that ambiguity, my main recommendation is that we continue asking 'who is an engineer' and 'what is engineering' in novel ways.

Energy and environment

The question of our time is climate change. That's a truth which *Engineering Studies* is just now adapting to. Practicing engineers have already made the turn, as have scholars in related fields of STS, history of technology, and the nascent community of energy humanities. Engineers were/are central figures in the creation of the Anthropocene, the recognition of climate change as a problem (and the war against that recognition), and in formulating responses to climate change. It's no accident that the most extreme family of responses is known as 'geoengineering'. Thus, there's every reason that energy humanities scholars such as Hannah Appel, Chris Jones, or Stephanie LeMenager should see *Engineering Studies* as the kind of journal they can read, publish in, cite, etc.[29] If the journal can't make itself relevant to humanities and social science research on energy and environment, then it risks being left out of an urgent and rapidly growing debate.

[25] E.g., von Hippel, *Democratizing Innovation*, 2006; Wynne, "Misunderstood Misunderstanding," 1992; Epstein, *Impure Science*, 1996.
[26] Dunbar-Hester, *Low Power to the People*, 2014; Richterich, "Hacking Events," forthcoming.
[27] Russell and Vinsel, "Let's Get Excited about Maintenance," 2017.
[28] Vinsel, "The Crusade," 2012; Oreskes and Conway, *Merchants of Doubt*, 2010.
[29] Appel, "Offshore Work," 2012; Lemenager, *Living Oil*, 2014; Jones, *Routes of Power*, 2014.

Philosophy of engineering

Finally, there is a long tradition of engineering practitioners, e.g. Walter Vincenti, turning toward philosophy; and of course, there is also a long tradition of philosophers teaching engineering ethics courses.[30] But we are now seeing increasing interest among philosophers in applying their discipline's concepts to aspects of engineering other than ethics, as well as to a broadening of 'ethics' to include things like participatory design.[31] *Engineering Studies* should encourage that move, while also encouraging philosophers of engineering to take into account developments in STS, history, sociology, and other constituent fields of engineering studies. One of the leaders in that move should have been Ann Johnson.[32] Ann's passing touched many readers of this journal – which shows what a prolific collaborator and mentor she was. We won't see her like again; but we can rely on the people she worked with to lead the philosophy of engineering into exciting new territory.

As I say, this list is by no means comprehensive, and will no doubt be out-of-date even before this editorial is published. But the two main thrusts of these topics are likely be at the center of engineering studies for some time: the much-needed but contested diversification in both engineering and engineering studies; and the growing magnitude and possible intractability of the societal challenges to which engineers (for better and worse) contribute. The expertise of this journal's authors, reviewers, and readers has never been more timely. I am excited and eager to help the new editorial team help you – our readers – to bring that expertise to new audiences and apply it in new directions.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

Appel, Hannah. "Offshore Work: Oil, Modularity, the How of Capitalism." *American Ethnologist* 39, no. 4 (2012): 692–709.

Bassett, Ross. "MIT-Trained Swadeshis: MIT and Indian Nationalism, 1880–1947." *Osiris* 24 (2009): 212–230.

Beddoes, Kacey. "Practices of Brokering: Between STS and Feminist Engineering Education Research." PhD dissertation, Virginia Tech, 2011.

Brewer, Kirstie. "How the Tech Industry Wrote Women Out of History." *The Guardian*, August 10, 2017.

Bursten, Julia R. "Surfaces, Scales, and Synthesis: Scientific Reasoning at the Nanoscale." PhD dissertation, Pittsburgh University, 2015.

Cech, Erin A., and Tom J. Waidzunas.: "Navigating the Heteronormativity of Engineering: The Experiences of Lesbian, Gay, and Bisexual Students." *Engineering Studies* 3, no. 1 (2011): 1–24.

Choi, Hyungsub. "Emerging Opportunities: Nanoelectronics and Engineering Research in a South Korean University." *History and Technology* 30 (2014): 334–353.

Cohn, Julie A. *The Grid: Biography of an American Technology*. Cambridge: MIT Press, 2017.

Dunbar-Hester, Christina. *Low Power to the People: Pirates, Protest, and Politics in FM Radio Activism*. Cambridge: MIT Press, 2014.

Epstein, Steven. *Impure Science: AIDS, Activism, and the Politics of Knowledge*. Berkeley: University of California Press, 1996.

[30] Vincenti, *What Engineers Know and How They Know It*, 1990.

[31] Verbeek, *Moralizing Technology*, 2011.

[32] Johnson, "Virtual Tools," 2006; "Revisiting Technology as Knowledge," 2006.

Gernter, Jon. *The Idea Factory: Bell Labs and the Great Age of American Innovation*. London: The Penguin Press, 2012.
González Rivera, Rafael A., Laura Cortés-Rico, Tania Pérez-Bustos, and Manuel Franco-Avellaneda. "Embroidering Engineering: A Case of Embodied Learning and Design of a Tangible User Interface." *Engineering Studies* 8, no. 1 (2016): 48–65.
Graham, Loren. *The Ghost of the Executed Engineer: Technology and the Fall of the Soviet Union*. Cambridge: Harvard University Press, 1996.
Gross, Matthias. "Journeying to the Heat of the Earth: From Jules Verne to Present-Day Geothermal Adventures." *Engineering Studies* 7, no. 1 (2015): 28–46.
Haring, Kristen. *Ham Radio's Technical Culture*. Cambridge: MIT Press, 2007.
Hicks, Marie. *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing*. Cambridge: MIT Press, 2017.
Hintz, Eric S. "Portable Power: Inventor Samuel Ruben and the Birth of Duracell." *Technology and Culture* 50 (2009): 24–57.
Howe, Cymene. "Anthropocenic Ecoauthority: The Winds of Oaxaca." *Anthropological Quarterly* 87 (2014): 381–404.
Jasanoff, Sheila, ed. *States of Knowledge: The Co-Production of Science and Social Order*. New York: Routledge, 2004.
Johnson, Ann. "Revisiting Technology as Knowledge: A Review Essay." *Perspectives on Science* 13, no. 4 (2006): 554–573.
Johnson, Ann. "Virtual Tools: Social and Epistemological Issues in Computer-Aided Process Design." In *Boston Studies in the Philosophy of Science: The Philosophy of Chemistry*, edited by Davis Baird, Lee McIntyre, and Eric Scerri, 273–291. Dordrecht: Springer, 2006.
Jones, Christopher F. *Routes of Power: Energy and Modern America*. Cambridge: Harvard University Press, 2014.
Khadria, Binod. *Skilled Labour Migration from Developing Countries: Study on India*. Geneva: International Labour Migration Programme, 2002.
Khandekar, Aalok. "Education Abroad: Engineering, Privatization, and the New Middle Class in Neoliberalizing India." *Engineering Studies* 5, no. 3 (2013): 179–198.
Kline, Ronald R. *Steinmetz: Engineer and Socialist*. Baltimore: The Johns Hopkins University Press, 1992.
Kline, Ronald R. "Construing 'Technology' as 'Applied Science': Public Rhetoric of Scientists and Engineers in the United States, 1880–1945." *Isis* 86 (1995): 194–221.
Knowles, Scott. "Engineering Risk and Disaster: Disaster-STS and the American History of Technology." *Engineering Studies* 6, no. 3 (2014): 227–248.
Law, John. "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion." In *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, edited by Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch, 111–134. Cambridge: MIT Press, 1987.
Layton, Edwin T. *The Revolt of the Engineers: Social Responsibility and the American Engineering Profession*. Cleveland: Press of Case Western Reserve University, 1971.
Lemenager, Stephanie. *Living Oil: Petroleum Culture in the American Century*. New York: Oxford University Press, 2014.
Long, Pamela O. *Openness, Secrecy, Authorship: Technical Arts and the Culture of Knowledge from Antiquity to the Renaissance*. Baltimore: The Johns Hopkins University Press, 2001.
MacKenzie, Donald. "Physics and Finance: S-Terms and Modern Finance as a Topic for Science Studies." *Science, Technology, and Human Values* 26 (2001): 115–144.
Mamidipudi, Annapurna. "Towards a Theory of Innovation in Handloom Weaving in India." PhD dissertation, Maastricht University, 2016.
Medina, Eden. *Cybernetic Revolutionaries: Technology and Politics in Allende's Chile*. Cambridge: MIT Press, 2011.
Mehos, Donna and Suzanne Moon. "The Uses of Portability: Circulating Experts in the Technopolitics of Cold War and Decolonization." In *Entangled Geographies: Empire and Technopolitics in the Global Cold War*, edited by Gabrielle Hecht, 75–99. Cambridge: MIT Press, 2011.

Memorandum of Understanding. SC 125 Richard Lyman Presidential Papers Series 1, Box 125, Folder National Aeronautics and Space Administration, Stanford University Library Special Collections, 1968.
Mody, Cyrus C. M. "A Little Dirt Never Hurt Anyone: Knowledge-Making and Contamination in Materials Science." *Social Studies of Science* 31 (2001): 7–36.
Mody, Cyrus C. M. "The Sounds of Science: Listening to Laboratory Practice." *Science, Technology, and Human Values* 30 (2005): 175–198.
Mody, Cyrus C. M. *Instrumental Community: Probe Microscopy and the Path to Nanotechnology*. Cambridge: MIT Press, 2011.
Nash, Linda. "Traveling Technology? American Water Engineers in the Columbia Basin and the Helmand Valley." In *Where Minds and Matter Meet: Technology in California and the West*, edited by Volker Janssen, 135–158. Berkeley: University of California Press, 2012.
Onion, Rebecca. *Innocent Experiments: Childhood and the Culture of Popular Science in the United States*. Chapel Hill: University of North Carolina Press, 2016.
Oreskes, Naomi and Erik M. Conway. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. New York: Bloomsbury, 2010.
Ottinger, Gwen. *Assessing Community Advisory Panels: A Case Study from Louisiana's Industrial Corridor* [Studies in Sustainability Series]. Philadelphia, PA: Chemical Heritage Foundation, 2008.
Pannabecker, John R. "School for Industry: L'Ecole d'Arts et Metiers of Chalons-sur-Marne under Napoleon and the Restoration." *Technology and Culture* 43 (2002): 254–290.
Richterich, Annika. "Hacking Events: Project Development Practices and Technology Use at Hackathons." *Convergence* (forthcoming).
Russell, Andrew and Lee Vinsel. "Let's Get Excited about Maintenance!" *New York Times*, July 22, 2017.
Schyfter, Pablo, Emma Frow, and Jane Calvert. "Guest Editorial: Synthetic Biology: Making Biology into an Engineering Discipline." *Engineering Studies* 5 (2013): 1–5.
Shetterly, Margot Lee. *Hidden Figures*. New York: William Morrow and Company, 2016.
Slaton, Amy E. "Opening the Lab: STEM Equity for Students with Disabilities." Blog Post, https://amyeslaton.com/stem-equity-for-students-with-disabiliteis/, May 11, 2012.
te Kulve, Haico, Kornelia Konrad, Carla Alvial Palavicino, and Bart Walhout. "Context Matters: Promises and Concerns Regarding Nanotechnologies for Water and Food Applications." *NanoEthics* 7 (2013): 17–27.
Thackray, Arnold, David C. Brock, and Rachel Jones. *Moore's Law: The Life of Gordon Moore, Silicon Valley's Quiet Revolutionary*. New York: Basic Books, 2015.
Tinn, Honghong. "Cold War Politics: Taiwanese Computing in the 1950s and 1960s." *IEEE Annals of the History of Computing* 32 (2010): 90–95.
Verbeek, Peter-Paul. *Moralizing Technology: Understanding and Designing the Morality of Things*. Chicago, IL: University of Chicago Press, 2011.
Vincenti, Walter G. *What Engineers Know and How They Know It*. Baltimore: Johns Hopkins, 1990.
Vinsel, Lee. "The Crusade for Credible Energy Information and Analysis in the United States, 1973–1982." *History and Technology* 28 (2012): 149–176.
von Hippel, Eric. *Democratizing Innovation*. Cambridge: MIT Press, 2006.
Wisnioski, Matthew H. *Engineers for Change: Competing Visions for Technology in 1960s America*. Cambridge: MIT Press, 2012.
Wynne, Brian. "Misunderstood Misunderstanding: Social Identities and Public Uptake of Science." *Public Understanding of Science* 1 (1992): 281–304.
Zhu, Qin. "Engineering Ethics Studies in China: Dialogue between Traditionalism and Modernism." *Engineering Studies* 2, no. 2 (2010): 85–107.

Cyrus C. M. Mody
c.mody@maastrichtuniversity.nl